# SICK’s Intelligent Inspection Makes Deep Learning Accessible

Waldkirch, July 2021 – SICK has enabled its innovative and easy-to-use Intelligent Inspection Deep Learning SensorApp across its entire InspectorP6xx family of 2D vision sensors, making it simpler for users to master complex sorting and quality inspection tasks for naturally grown produce, irregular-shaped goods, packaging and assemblies, especially where they may have previously defied automation using rule-based vision systems.

The SICK Intelligent Inspection Deep Learning SensorApp is now available to run directly onboard all InspectorP6xx vision cameras. SICK Intelligent Inspection is available as a seamless extension to the pre-installed Quality Inspection SensorApp, on all InspectorP6xx cameras. By combining traditional machine vision for quality inspection with a powerful extended Deep Learning capability, Intelligent Inspection opens up opportunities for users to automate challenging inspections that have not been possible previously.

Vision classifications using Artificial Intelligence are now simple to set up and run across the entire range of SICK InspectorP6xx vision sensors. The newly-launched, ultra-compact InspectorP61x is the smallest vision sensor currently available with Deep Learning running directly onboard, and the Intelligent Inspection capability extends right up to the rugged InspectorP65x with its extra high resolution and extended field of view.

**Practical and Affordable AI Classification**

Where it has previously been very challenging to achieve consistently robust and repeatable quality inspections, with the SICK Intelligent Inspection SensorApp they can now be mastered with high levels of reliability and availability. Automation is therefore practical and affordable for complex imaging tasks such as checking the orientation of timber profiles by recognizing their annual ring structure; inspecting highly reflective surfaces, such as assemblies containing metal parts; classifying objects with slight differences within one class, such as food produce; or inspecting the integrity of solder in surface mount assemblies.

Fredrik Nilsson, Head of Business Unit Machine Vision at SICK explains: “By extending the Intelligent Inspection SensorApp to all of SICK’s InspectorP6xx cameras, SICK has made it possible for users to select the best vision sensor for the inspection task in hand, then progress seamlessly to run complex Artificial Intelligence vision inspections with ease.

“Users are guided through an intuitive process in the Cloud that teaches the system how to recognize ‘good and bad’ examples using SICK’s specially-optimized neural networks.”

**Intuitive Step-By-Step Process**

With the Intelligent Inspection image collection tool, users begin by collecting example images of their product in real production conditions. Then, they simply upload the images to SICK’s cloud-based training service, dStudio and use a step-by-step process to train and evaluate a neural network to meet the needs of the inspection. Additional images can then be added and evaluated, if needed, to perfect the result.

Once satisfied, users deploy the custom-trained deep learning neural network to the SICK InspectorP6xx camera where it can begin to take decisions automatically, with no further Cloud connection necessary. The image inference is carried out directly on the device, so there is no need for an additional PC. As the system training is done in the Cloud, there is also no need for separate training hardware or software, saving on implementation time and cost.

“Because it runs directly on the SICK InspectorP6xx vision sensors, the SICK Intelligent Inspection SensorApp does not require any additional hardware,” says Anders Gibeck, Product Manager 2D machine vision at SICK “So, you can automate complex vision inspections for a much lower cost of ownership. You can consider automating the sorting and quality inspection of products or goods that have just proved too difficult previously.

“You are guided all the way to a simple solution thanks to the example-based image training approach and easy-to-use interface. If needed, SICK also offers services to support customers through the feasibility, commissioning and neural network training process.”

With the benefit of training a neural network based on real examples, users can try out the suitability of deep learning classification for their application before purchasing the additional license required. They can also use traditional rule-based vision tools together with deep learning to solve the application.

Developers working in SICK's AppSpace can save coding time and effort by plugging in to the SICK Nova machine vision toolbox to customize or create their own SensorApps.

**SICK Inspector P6xx Vision Sensors**

The SICK InspectorP6xx series of versatile 2D configurable and programmable vision sensors are designed for ease of use and versatility, whatever the application. From the miniscule InspectorP61x and the compact P62x, versatile InspectorP6xx vision sensors offer a scale of performance levels and longer ranges to meet every application. Characterized by high-quality lenses and powerful onboard LED illumination, all InspectorP6xx sensors have the SICK Quality Inspection SensorApp pre-installed onboard, and are supported by the versatility of SICK’s AppSpace software platform.

For novice and expert users alike, the SICK Inspector P6xx family is founded on accessibility and on the flexibility of scalable onboard software to solve wide-ranging 2D machine vision applications. With the Intelligent Inspection SensorApp, users will always have the option to try out deep learning classifications as an extension to their existing quality inspections, before taking a decision to purchase a license.

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Master complex sorting and quality inspection with Intelligent Inspection Deep Learning SensorApp

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SICK is one of the world’s leading solutions providers for sensor-based applications in the industrial sector. Founded in 1946 by Dr.-Ing. e. h. Erwin Sick, the company with headquarters in Waldkirch im Breisgau near Freiburg ranks among the technological market leaders. With more than 50 subsidiaries and equity investments as well as numerous agencies, SICK maintains a presence around the globe. In the 2020 fiscal year, SICK had more than 10,000 employees worldwide and a group revenue of around EUR 1.7 billion. Additional information about SICK is available on the Internet at http://www.sick.com or by phone on +49 (0)7681202-4183.